**Biographical Sketch**

James I. Lathrop

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**Professional Preparation**

California State University, Long Beach, Long Beach, CA, Electrical Engineering, B.S., 1983

University of California, Irvine, Irvine, CA, Electrical and Computer Engineering, M.S., 1987

Iowa State University, Ames, IA, Computer Science, M.S., 1994

Iowa State University, Ames, IA, Computer Science, Ph.D., 1997

**Appointments**

Iowa State University, Department of Computer Science

Assistant Professor, 2017-present

Senior Lecturer of Computer Science, 2007-2017

Lecturer, 2003-2007

Instructor and Affiliate Assistant Professor, 1997-1998

NewMonics Inc.

Director, Professional Services, 1999-2003

Manager, Professional Services, 1998-1999

Scientist, 1997-1998

Hughes Aircraft Company

Member Technical Staff Level II, 1990 -1994

Member Technical Staff, 1983-1989

**Products**

**(i) Five Publications Most Closely Related to Proposed Project**

[1] Xiang Huang, Titus H. Klinge, and James I Lathrop, Real-time equivalence of chemical reaction networks, in: *C. Thachuk and Y. Liu (eds) DNA Computing and Molecular Programing, DNA 2019, Lecture Notes in Computer Science, vol 11648*, (2019), pp. 37-53

[2] Xiang Huang, Titus H. Klinge, James I. Lathrop, Xiaoyuan Li, and Jack H. Lutz, Real-time computability of real numbers by chemical reaction networks, *Natural Computing*, **18** (2019) pp. 63-73

[3] Samuel J. Ellis, Titus H. Klinge, James I. Lathrop, Jack H. Lutz, Robyn R. Lutz, Andrew S. Miner, and Hugh D. Potter, Runtime fault detection in programmed molecular systems, *ACM Transactions on Software Engineering Methodology (TOSEM)*, **28** (2019) pp. 6:1 – 6:20

[4] Samuel J. Ellis, James I. Lathrop, and Robyn R. Lutz, State logging in chemical reaction networks, *4th ACM Int’l Conference on Nanoscale Computing and Communication (NanoCom)*, Washington, DC, USA, Sept. 27-29, 2017, pp. 23:1 – 23:6

[5] Samuel J. Ellis, James I. Lathrop, and Titus H. Klinge, Robust chemical circuits, *BioSystems* (in press but available electronically <https://doi.org/10.1016/j.biosystems.2019.103983>, June 2019) to appear in print.

**(ii) Five Other Significant Publications**

[1] Automated Requirements Analysis for a Molecular Watchdog Timer (with Samuel J. Ellis, Eric Henderson, Titus H. Klinge, Jack H. Lutz, Robyn R. Lutz, Divita Mathur, Andrew S. Miner), *29th IEEE/ACM Int’l Conf on Automated Software Engineering (ASE 2014*), 2014, pp. 767-778. IFIP TC2 Manfred Paul Award “for Excellence in Software: Theory and Practice.” 10.1145/2642937.2643007.

[2] James I. Lathrop, Jack H. Lutz, Matthew Patitz, and Scott Summers, Computability and complexity in self-assembly, *Theory of Computing Systems* (2011) pp. 617-647. Invited paper. 10.1007/s00224-010-9252-0

[3] Steve Kautz and James I. Lathrop, Self-assembly of the discrete Sierpinski carpet and related fractals, *DNA Computing and Molecular Programming: 15th International Conference, DNA 15*, Fayetteville, AR, USA, June 8-11, 2009, Lecture Notes in Computer Science, 5887 (2009) pp. 78–87. 10.1007/978-3-642-106040\_8

[4] James I. Lathrop, Jack H. Lutz, Scott Summers, Strict self-assembly of discrete Sierpinski triangles, *Theoretical Computer Science* **410** (2009) pp. 384-405. Invited paper. 10.1016/j.tcs.2008.09.062

[5] James I. Lathrop and Jack H. Lutz, Recursive computational depth, *Information and Computation*, **153** (1999) pp. 139 – 172.

**Synergistic Activities**

[1] Developed (with Jack Lutz and Robyn Lutz at Iowa State University) an interdisciplinary research group in molecular programming, now the Iowa State University Laboratory for Molecular Programming (LAMP, http://www.cs.iastate.edu/~lamp )

[2] Developed (with PI Titus Klinge) molecular programming workshops for undergraduate students and faculty at Simpson College (Indianola, Iowa) Simulating Self-assembly Systems, April 21, 2011, Workshop on Molecular Programming: Programming Matter to Do Our Bidding, April 8, 2015

[3] Co-developed (with Jack Lutz) course in nanoscale self-assembly and molecular programming at Iowa State University

[4] Mentored four undergraduate students at Simpson College participating in the Carver Bridge To STEM Success program

[5] Mentored undergraduate students (individually and collaboratively with Titus Klinge)

1. four undergraduate students supervised by PI Titus Klinge at Grinnell College (Grinnell, Iowa) to create molecular programming software tools
2. nine undergraduate students in Freshman Honors program and/or independent study at Iowa State University to research molecular programming
3. two undergraduate students supervised by PI Titus Klinge at Carelton College (Northfield, Minnesota) together with two graduate students at Iowa State University to research molecular programming that resulted in a poster publication at DNA 2019